ABSTRACT OF THE DISCLOSURE

A novel protocol for an ad-hoc, peer-to-peer radio network that provides collision-free channel access with an emphasis on improving geographic reuse of the frequency spectrum. The protocol of the invention is executed on the reservation or control channel, and provides a method for allocating data transactions on the data channels. The system of the invention utilizes multiple parallel data channels that are coordinated by a single reservation channel. The transceiver of the system employs two modems to solve the channel reliability issues with multiple channel designs, where one is dedicated as a receive-only modem for gathering channel usage information on the reservation channel. High quality voice, video and data may be transmitted. The reservation channel implements a time division multiple access algorithm with dynamic slot allocation. In a distributed manner, nodes determine geographic reuse of slots based on channel quality extracted from the modem. Signal quality calculations are used to determine the likelihood of a slot reuse causing destructive interference within a node's neighborhood. Requests for slot usage are compared with the known traffic pattern and accepted or rejected by nodes within RF signal range based on the signal quality calculations.